STATE OF NEW JERSEY)
)
COUNTY OF BURLINGTON)

AFFIDAVIT

I, Pauline M. Ahern, first being duly sworn upon oath depose and say that I am employed by AUS Consultants – Utility Services, as Vice President; that I have read the attached and foregoing Rebuttal Testimony of Pauline Ahern in Docket Nos. 00-0337, 00-0338 and 00-0339 (consolidated), which is identified as CIWC Exhibit 7.0R, as well as Schedules 1 through 10, which are attached thereto; that these documents were prepared by me or under my supervision and I know the contents thereof; that said contents are true in substance and in fact; and that CIWC Exhibit 7.0R and Schedules 1 through 10 are the testimony and exhibits I wish to give in this proceeding.

Further affiant sayeth not.

Pauline M. Ahern

OFFICIAL FILE
I.C.C. DOCKET NO. 00-0337-0339
CIWC Exhibit No. 7.0R
Witness Ahern
Date 11/17/00 Reporter Eve

Subscribed and Sworn
to before me this
10th day of November, 2000.

Notary Public

SHARON M. KEEFE
NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES JULY 9, 2001

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EXHIBIT 7.0R

REBUTTAL TESTIMONY

OF

PAULINE AHERN

CONSUMERS ILLINOIS WATER COMPANY

DOCKET NOS. 00-0337, 00-0338, 00-0339

Consolidated

September 29, 2000

CIWC EXHIBIT 7.0R

CONSUMERS ILLINOIS WATER COMPANY

ILLINOIS COMMERCE COMMISSION
DOCKET NOS 00-0337, 00-0338 AND 00-0339.
REBUTTAL TESTIMONY
OF
PAULINE M. AHERN

I. INTRODUCTION

Q. Please state your name, occupation and business address.

A. My Name is Pauline M. Ahern and I am a Vice President of AUS Consultants – Utility Services. My business address is 155 Gaither Drive, P. O. Box 1050, Moorestown, New Jersey 08057.

Q. Are you the same Pauline M. Ahern who previously submitted prepared direct testimony in this proceeding?

A. Yes, I am.

Q. Have you prepared an exhibit which supports your rebuttal testimony?

A. Yes, I have. It has been marked for identification as Exhibit No. 7.0R and consists of 10 schedules.

II. PURPOSE

Q. What is the purpose of this testimony?

A. The purpose of this testimony is to rebut certain aspects of the testimony of Michael McNally, Staff Witness for the Illinois Commerce Commission (ICC) concerning common equity cost rate. Specifically, I will address Mr. McNally's exclusive reliance upon the Discounted Cash Flow (DCF) Model, the inadequacy of his recommended overall rate of return, including common equity cost rate, as well as respond to his comments on my direct testimony.

III. TESTIMONY OF ICC STAFF WITNESS MICHAEL MCNALLY

A. Cost of Common Equity

1. Exclusive Reliance Upon DCF

Q. **Mr. McNally's range of recommended common equity cost rate of 9.90% - 10.40% is based exclusively upon the DCF model. Please comment.**

A. Although Mr. McNally also employs a Risk Premium analysis, which is really a CAPM analysis, it is dependent upon the DCF model. On page 20, at lines 384 - 386 of ICC Staff Exhibit 7, Mr. McNally indicates that the expected rate of return on the market upon which he based the equity risk premium, used in his CAPM analysis, was estimated by utilizing a DCF analysis of the companies comprising the Standard & Poor's (S&P) 500 Index.

The DCF Model is market-based as current market prices are employed in its application. Therefore, it is based upon the Efficient Market Hypothesis (EMH) which is the foundation of modern investment theory. The EMH, which is discussed in detail in CIWC Exhibit No. 7, means that investors are aware of all publicly-available information, including bond ratings; discussions about companies by bond rating agencies and investment analysts as well as the various cost of common equity methodologies (models) discussed in the financial literature. This means that no single common equity cost rate model should be relied upon in determining a cost rate of common equity and that the results of multiple independently derived cost of common equity models should be taken into account.

In view of the foregoing, it is clear that Mr. McNally, because his CAPM analysis is dependent upon a DCF analysis, relied exclusively upon the DCF in arriving at his recommended range of common equity cost rate for CIWC. Therefore, Mr. McNally's exclusive reliance upon the DCF model is at odds with the very foundation, i.e., the EMH, upon which the DCF is predicated.

2. Discounted Cash Flow

Q. On page 10, at lines 195 - 198 of ICC Staff Exhibit 7, Mr. McNally states that "A comprehensive analysis of a utility's operating and financial risks becomes unnecessary in DCF analysis since the market price of a utility's stock already embodies the market consensus of those risks." Please comment.

A. This statement is true to the extent that the cost rate of common equity derived from a DCF analysis will be used in determining the investor required rate of return for the utility whose market prices and growth rate(s) are used for the DCF analysis. However, rates set in the instant proceeding will be applied to the jurisdictional rate base of Consumers Illinois Water Company (CIWC) and not the company or companies in either my proxy groups or Mr. McNally's sample groups. Therefore, a comprehensive analysis of CIWC's risks vis-a-vis the companies upon whose market data both I and Mr. McNally rely is mandatory in order to assess the applicability of any cost rate(s) of common equity derived from such data to CIWC's rate base and whether any relative risk adjustment is warranted.

Q. Please comment upon Mr. McNally's use of spot market prices in his DCF analysis.

A. Although DCF theory indicates that the appropriate stock market price to use in a DCF analysis is the spot market price, the use of average stock prices over the recent past normalizes the effect of any market aberrations or volatility. It also normalizes the effects of dramatic company-specific events upon stock price, such as unmet earnings expectations, merger / acquisition rumors, acts of God in the company's service territory, litigation, etc.

The components of the revenue requirement in utility ratemaking are based upon normal operations. Therefore, attempts are made to estimate the Company's normal expenses / costs, including its capital costs. For example, typically, embedded fixed capital costs, e.g., yields to maturity, are used to estimate the cost of fixed capital over the

life of the capital. Likewise, common equity cost rates applied to the common equity portion of the utility's rate base must reflect the normal operations of the utility and not be affected by temporary market aberrations affecting the market prices of the companies used as proxies for the regulated utility. This is especially true in today's capital market environment when the water companies used as proxies for a regulated water utility, such as CIWC, are large, geographically diverse holding companies comprised of a portfolio of assets. Moreover, recent merger / acquisition activity has affected the common stock prices of all water utilities; the acquiring companies, those acquired, as well as the rest, which are all in play in today's merger / acquisition market. Hence, the use of spot prices, while reflecting the "market's assessment of the common stock's current value" does not accurately reflect the cost rate of common equity of the operating, regulated water utility on an ongoing, continuing basis.

3. Risk Premium Analysis, i.e., Capital Asset Pricing Model

Q. Please comment upon Mr. McNally's risk premium analysis.

A. As previously discussed, Mr. McNally's risk premium analysis is a traditional CAPM analysis. Moreover, it is understated because he developed the market equity risk premium based upon a market return developed using a DCF analysis.

As discussed in CIWC Exhibit No. 7, my direct testimony, at page 17, line 21 through page 27, line 2, I discuss the tendency of the DCF model to mis-specify investors' required return rate when the market value of common stock differs significantly from its book value. Mathematically, the DCF model understates investors' required return rate when market value exceeds book value because, market prices reflect investors' assessments of long-range market price growth potentials which are not reflected in the growth rate proxies, such as I/B/E/S projected earnings per share (EPS) growth rate estimates. The market-to-book ratio of the S&P 500 Index (S&P 500) was 496.4% at year end 1999, the most recently available date, which was significantly

greater than unity. Clearly, then, a DCF-derived total market return grossly understates the true investors' required return rate for the S&P 500 and hence, understates both the equity risk premium used by Mr. McNally in his CAPM as well as his resultant CAPM derived common equity cost rates of 10.19% and 10.50%

Q. **Mr. McNally calculates his own beta estimates for the companies in both his water sample and his comparable sample. Please comment.**

A. Rate of return analysts, such as myself and Mr. McNally, should attempt to emulate investor behavior to the greatest extent possible in our rate of return analyses because we are attempting to estimate the investors' required return on common equity. It is not necessary to independently calculate betas, as they are widely available and relatively inexpensive, from sources such as Value Line Investment Survey (Value Line) and Merrill Lynch, to both rate of return analysts and the investors whose behavior the analysts such as Mr. McNally and I should be attempting to emulate.

Moreover, the methodology Mr. McNally utilizes to calculate his betas is inconsistent with the methodology used by Value Line and Merrill Lynch. On page 21 of ICC Staff Exhibit 7.0R, Mr. McNally states that he calculated his betas by regressing the excess returns (stock market returns less U. S. Treasury bill returns) of the companies in each of his two samples against the excess returns of the S&P 500 to estimate raw betas. Next, he adjusted these raw betas in a manner similar to the methodology Value Line uses to adjust their betas.

Schedule 1 of Exhibit No. 7.0R accompanying this testimony contains Value Line's description of its beta calculation and subsequent adjustment. As indicated in Schedule 1, Value Line calculates its betas from least-squares regression analyses "between weekly percent changes in the price of a stock and weekly percent changes in the New York Stock Exchange Composite Index over a period of five years." Value Line does not calculate its betas from excess returns. Similarly, Merrill Lynch calculates its

betas using a standard regression of the monthly price returns of individual stocks and the monthly price returns on the S&P 500 Index and not excess returns as indicated in Schedule 2 of Exhibit No. 7.0R

In view of the foregoing, namely the wide and inexpensive availability of published betas, it is completely unnecessary for Mr. McNally to calculate his own betas, especially using a methodology which differs from that used by Value Line and Merrill Lynch, both of which are investor influencing.

Q. On page 22 of ICC Staff Exhibit 7.0R, lines 416 - 430, Mr. McNally discusses his reasons for adjusting betas. Please comment.

A. Specifically, Mr. McNally states at lines 423 - 425, that "[a] the raw beta estimate towards the market mean value of 1.0 compensates for the observed flatness in the linear relationship between risk and return." He then cites pp. 375-376 of an article by Litzenberger, Ramaswamy and Sosin in support for this assertion. Schedule 3 of Exhibit No. 7.0R accompanying this testimony is a copy of that article: "On the CAPM Approach to the Estimation of A Public Utilities' Cost of Equity Capital," Litzenberger, Ramaswamy and Sosin, *Journal of Finance*, May 1980 pp. 369-383. Page 375, of Litzenberger, et al., contains Blume's observation "that historical betas which are adjusted towards unity are better predictors of future betas . . . than are unadjusted betas."[1] Nowhere on pp. 375-376 do the authors mention or discuss the "observed flatness in the linear relationship between risk and return." Rather, the Empirical CAPM (ECAPM), which will be discussed subsequently, corrects for the "observed flatness in the linear relationship between risk and return." My colleague, Frank J. Hanley, President, AUS Consultants – Utility Services, has been in communication with Dr. Roger A. Morin, author of Regulatory Finance – Utilities' Cost of Capital and Professor

of Finance at the J. Mack Robinson College of Business and Distinguished Professor of Finance for Regulated Industry at the Center for the Study of Regulated Industry at Georgia State University. Schedule 4 of Exhibit No. 7.0R accompanying this testimony is a copy of recent e-mail correspondence between Mr. Hanley and Dr. Morin. Dr. Morin's response to Mr. Hanley makes it very clear that the ECAPM is quite separate from the beta adjustment for regression bias, i.e., the tendency of raw betas to move toward unity.

In view of the foregoing, although Mr. McNally correctly, and commendably, adjusted his calculated raw betas, he did so for the wrong reason.

4. Mr. McNally's Recommended Range of Common Equity Cost Rate

Q. Please discuss Mr. McNally's recommended range of common equity cost rate of 9.90% - 10.40%.

A. Mr. McNally's range of recommended common equity cost rate of 9.90% - 10.40% is inadequate for three reasons. First, such a range provides an insufficient risk premium over and above the cost of public utility debt. Second, such a range does not reflect the additional risk experienced by CIWC due to its small size vis-à-vis the companies in his water and comparable samples. Third, such a range does not provide CIWC with an adequate opportunity for pretax interest coverage in order to maintain its credit quality and ability to attract capital on reasonable terms in competition with other firms of similar risk.

Q. How does a range of common equity cost rate of 9.90% to 10.40% compare with utility debt costs?

A. Moody's A rated public utility bonds were currently yielding 8.34%, as of September 15, 2000. This implies an equity risk premium of between 1.56% and 2.06% relative to Mr.

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[1] "On the CAPM Approach to the Estimation of A public Utilities' Cost of Equity Capital," Litzenberger, Ramaswamy and Sosin, *Journal of Finance*, May 1980 pp. 369-383. On

McNally's range of recommended common equity cost rate. Given that Mr. McNally acknowledges that A rated public utility bonds are "less risky", (line 453 of page 23 of ICC Staff Exhibit 7.0R) than CIWC, presumably a comparison of his range of recommended common equity cost rate with Moody's Baa rated public utility bond yields is also appropriate. On September 15, 2000, Moody's Baa rated public utility bonds were yielding 8.41%, implying a range of equity risk premium of 1.49% to 1.99%.

In addition, relative to Mr. McNally's recommended long-term debt cost rate for CIWC, his range of recommended common equity cost rate provides an equity risk premium of but 1.42% to 1.92%.

In contrast, Mr. McNally's own beta adjusted risk-premium applicable to his water sample is 4.69% (Schedule 7.09, ICC Staff Exhibit 7.0R). In addition, my RPM analysis indicates that an appropriate risk premium for A rated public utility bonds is in the range of 4.6% (based upon a study of the holding period returns of A rated public utilities) to 4.8% (based upon the total market using the beta approach and applicable to A rated water companies) (page 5 of Schedule 15, CIWC Exhibit No. 7). Equity risk premiums on the order of 1.42% to 2.06% are clearly inconsistent and inadequate compared with both Mr. McNally's own calculated equity risk premium as well as those developed in my RPM analysis.

In view of the foregoing, and given that Mr. McNally's recommended range of common equity cost rate provides an inadequate equity risk premium for CIWC, Mr. McNally's recommendation should be rejected.

Q. **Mr. McNally's recommended range of common equity cost rate does not reflect an upward adjustment to reflect CIWC's additional risk. Please comment.**

A. As stated above, even Mr. McNally acknowledges that CIWC is more risky than A rated public utilities, such as his water and comparable groups. Yet, he has made no upward

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pp. 375-376

adjustment to his range of recommended common equity cost rate to reflect such risk. He states on page 25, lines 473 - 476, that his "analysis of the risk of CIWC as compared to that of my two proxy samples, represented by his "four factor scores, indicates that the risk of CIWC is equal to, or slightly less than, the risk of both the comparable sample and the water sample." Yet, Mr. McNally has neither identified the four factors resulting from his principle components analysis nor discussed the relevance of the resulting factor coefficients shown on Schedule 7.04 of ICC Staff Exhibit 7.0R. Mr. McNally has provided no theoretical, empirical or statistical support that the coefficients of the unidentified factors for CIWC indicate that CIWC's risk is "equal to or slightly less than, the risk of both the comparable sample and the water sample."

In addition, Mr. McNally is inconsistent when he asserts that companies with A rated bonds are less risky than CIWC and the implication later in his testimony implies that CIWC's investment risk is similar to that of Philadelphia Suburban Water Company (PSC) whose bonds are rated AA- by S&P. Since companies with A rated bonds are more risky than companies with AA rated bonds, it is only logical that CIWC, based upon Mr. McNally's testimony and his implicit acknowledgement that CIWC is more risky than companies with A rated bonds, is considerably more risky than PSC, whose bonds are rated AA-.

Moreover, Mr. McNally has not reflected the additional risk of CIWC due to its small size vis-à-vis the companies in his sample groups. Because CIWC is the regulated utility against whose rate base the Commission's ultimately allowed overall cost of capital and fair rate of return will be applied, the relevant risk reflected in the cost of capital must be that of CIWC, including the impact of its small size on common equity cost rate. As discussed in CIWC Exhibit No. 7, my direct testimony, at page 11, lines 7 - 16, size is an important factor which affects common equity cost rate, an observable phenomenon widely discussed in the financial literature. The Company is significantly

smaller than the average company in either of Mr. McNally's sample groups based upon total investor-provided capital or market capitalization as shown below:

Table 3

	1999 Total Capital ($ millions)	Times Greater than The Company	Market Capitalization ($ Millions)	Times Greater than the Company
Mr. McNally's Water Utility Sample	$ 867.029 (1)	10.6x	$570.029 (1)	7.3x
Mr. McNally's Comparable Sample	$3,349.694 (1)	40.8x	$2,086.997 (1)	26.7x
Consumers Illinois Water Company	$82.145 (1)		$78.183 (1)	

(1) From Schedule 5, Exhibit No. 7.0R.

I have also made a study of the relative market capitalization of CIWC vis-a-vis the companies in Mr. McNally's two sample groups. The results are shown on Schedule 5 of Exhibit No. 7.0R Schedule 5 contains a summary of the market capitalizations as of June 30, 2000.

CIWC's common stock is not publicly traded. Consequently, I have assumed that if it were publicly traded, its consolidated common shares would have sold at the same market-to-book ratio as the current average market-to-book ratio for Mr. McNally's water utility sample, or 186.8% at August 9, 2000. Hence, the company's market capitalization is estimated to be $78.183 million as of August 9, 2000. In contrast, the market capitalization of the average sample water utility was $570.271 million on August 9, 2000, or approximately 7.3 times larger than the Company's estimated market capitalization. And, the market capitalization of the average comparable sample company was $2,086.997 million on August 9, 2000, or approximately 26.7 times larger than CIWC's estimated market capitalization. It is conventional wisdom, supported by actual returns over time, and a general premise contained in basic finance textbooks, that

smaller companies tend to be more risky causing investors to expect greater returns as compensation for that risk.

As noted in CIWC Exhibit No. 7.0R, my direct testimony, at page 12, lines 3 - 22, the financial literature affirms a relationship between size and common equity cost rate. Mr. McNally, himself, acknowledges the factors which relate to both size and return on page 46 of ICC Staff Exhibit 7.0R when he discusses the liquidity of small firms and increased information costs. However, his discussion on page 46 has the proverbial cart before the horse. It is precisely because of the size of smaller companies that their securities are relatively "less liquid than those of larger companies since the potential breadth of the market for the former is usually more limited." (ICC Staff Exhibit 7.0R, p. 46, lines 898 –900). On page 46, Mr. McNally also discusses the increased information, i.e., transaction, costs associated with small companies. Hence, without accepting that a size premium exists, he acknowledges the very factors which illustrate the existence of such a premium.

Q. **You previously stated that Mr. McNally's recommended range of common equity cost rate of 9.90% to 10.40% does not provide CIWC with an adequate opportunity for pretax interest coverage. Please explain.**

A. Mr. McNally's range of recommended common equity cost rate results in a range of after-income tax overall rate of return of 9.14% to 9.39%. Using a company provided combined effective statutory federal and state income tax rate of 39.67% (from page 1 of Schedule 1, CIWC Exhibit No. 7), a before-income tax overall rate of return of 12.40% to 12.81% can be derived. This results in the opportunity for pretax interest coverage of 2.95 – 3.04 times. An opportunity for pretax interest coverage of 2.95 – 3.04 times is substandard compared with S&P's financial target pretax interest coverage ratios for utilities whose bonds are rated A and are assigned a business position of "3", such as the companies in my proxy group of six water companies. S&P requires an achieved range

pretax interest coverage of 2.8 - 3.4 times for utilities which are assigned a business position of "3", such as the companies in my proxy group of six water companies, to obtain and maintain an A bond rating. As discussed in CIWC Exhibit No. 7, at page 50, lines 23 - 25, if the Company's long-term debt were rated and a business position assigned by S&P, it would likely have a debt rating in the A category and a business position of "4". In order for utilities with a business position of "4" to obtain and maintain an A bond rating, S&P requires a range of achieved pretax of 3.3 – 4.0 times. Clearly, the opportunity for pretax coverage of but 2.95 – 3.04 times implicit in Mr. McNally's recommended overall rate of return is an inadequate opportunity for CIWC and is substandard relative to S&P's financial target ratios. In contrast, implicit in CIWC's requested overall rate of return of 9.76% is an opportunity for pretax interest coverage of 3.26 times. Pretax interest coverage of 3.26 times falls near the middle of the range of pretax interest coverage of 2.8 to 3.4 times required by S&P for a utility with a business position of "3" to obtain and maintain an A bond rating. And, pretax interest coverage of 3.26 times falls just below the bottom of the range of 3.3 – 4.0 times required by S&P for a utility with a business position "4", which is likely for CIWC, to obtain and maintain an A bond rating.

In view of the foregoing, namely, that Mr. McNally's recommended range of common equity cost rate provides an inadequate opportunity for pretax interest coverage, Mr. McNally's recommendation should be rejected and the Company's requested overall rate of return, which provides a reasonable, if not conservative, opportunity for pretax interest coverage should be adopted by this Commission in the instant docket.

I

RESPONDING TO COMMENTS ON COMPANY TESTIMONY

A. Use of Historical Data

Q. On page 26, line 505 through page 29, line 564 of ICC Staff Exhibit 7.0R, Mr. McNally comments upon your use of historical data in the your application of the DCF, RP, CAPM and Comparable Earnings Model (CEM). Please comment.

A. As stated previously, rate of return analysts, such as myself and Mr. McNally, are attempting to emulate investor behavior. Absent empirical evidence to the contrary, it is reasonable to assume that investors utilize historical data in arriving at their expectations and required returns. Such data, i.e., historical, are presented by companies in their financial reports to shareholders, on their internet homepages and required by the Securities and Exchange Commission (SEC). Historical data are also provided by major, investor influencing publications and agencies such as Value Line Investment Survey, Standard & Poor's, Ibbotson Assoc., the U. S. Treasury Department, etc. Moreover, historical data are the bases for I/B/E/S forecasts, which are based upon growth from the most recent fiscal year end. Consistent with the EMH as discussed earlier, investors are aware of all information, historical and projected, which is available to them. Therefore, absent evidence to the contrary, it is reasonable to evaluate historical data in a rate of return analysis particularly for water companies, because the water industry is not experiencing the dramatic changes attributable to deregulation and restructuring that are occurring in the energy, i.e., electric and natural gas, industries. Under those circumstances historical data have less significance. Such is not the case for the water utility industry.

Q. Do you agree with Mr. McNally's statement on page 26, line 507 through page 27, line 508 that "[h]istorical data reflects [sic] conditions that may not continue in the future?"

A. No. The use of the words "may not" implies the converse as well – namely that historical data reflect conditions that may continue in the future. Moreover, as discussed in my direct testimony, CIWC Exhibit No. 7, at page 34 line 16 through page 28, line 35, Ibbotson Associates indicate that while past actual events are not likely to be repeated in the future, the event-types of a period can be expected to recur. Schedule 6 of Exhibit No. 7 accompanying this testimony is an excerpt from Ibbotson Associates' Stocks, Bonds, Bills and Inflation: Valuation Edition 2000 Yearbook. On page 66 of the Valuation Edition 2000 Yearbook, Ibbotson Assoc. state the following regarding the use of historical data in evaluating investors' return expectations:

> "Finally, Because historical event-types (not specific events) tend to repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect "unusual" events to occur from time to time, and their return expectations reflect this."[2] (emphasis added)

Mr. McNally is also incorrect when he states that the use of "average historical data wrongly implies that securities data will revert to a mean." He is correct when he states that security return movements approximate a random walk, - with no mean reversion. But as Ibbotson Associates studies of long-term historical market returns and equity risk premia indicate that both are randomly generated[3]. However, statistically speaking, the average, specifically the arithmetic mean, is the best estimate of the next expected value of randomly generated data – such as market returns and equity risk premia. Ibbotson Associates state:[4]

> "The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean) of its past values."

Hence, use of average, specifically the arithmetic mean, historical data does not imply mean reversion, rather it is the best estimate of the next expected value of the data in

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2 Ibbotson Associates, Stocks, Bonds, Bills and Inflation: Valuation Edition 2000 Yearbook, Chicago, IL, 2000, p. 66.

3 Id., p. 64.

4 Id., p. 64.

question. In other words, using the arithmetic mean of randomly generated data, such as long-term historical stock market returns or equity risk premia, is forward looking, expectational and entirely appropriate for a cost of capital determination.

Q. Please comment upon Mr. McNally's citation from Burton G. Malkiel's book A Random Walk Down Wall Street.

A. Mr. McNally has taken the referenced sentence out of context. The quotation by Malkiel found on page 27, line 512 of ICC Staff Exhibit 7.0R in its full context is as follows:

> "A random walk is one in which future steps or directions cannot be predicted on the basis of past actions. When the term is applied to the stock market, it means that short-run changes in stock prices cannot be predicted."[5] (emphasis added)

Short-run changes in stock prices are not what rate of return analysts such as myself and Mr. McNally are attempting to derive in our analyses of the cost of common equity. We are trying to emulate investor behavior, using data available to us and to investors, in an attempt to arrive at an expert opinion of long-run investor expectations, which are not directly observable or measurable. In doing so, we us proxies for investor growth rate expectation information such as I/B/E/S forecasted EPS growth rates. As discussed above, the arithmetic mean long-term historical equity risk premia, statistically speaking, is the best estimate of the next expected equity risk premium.

B. Discounted Cash Flow Model

Q. Please discuss Mr. McNally's comments on your use of historical data in your DCF analysis.

A. As previously discussed, although DCF theory indicates that spot market prices be used in a DCF analysis, the use of average stock prices of a recent period normalizes the effects of market aberrations, volatility and dramatic company-specific events upon stock

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[5] Burton G. Malkiel, A Random Walk Down Wall Street, W. W. Norton & Company, 1990, p. 24.

prices. Furthermore, the use of historical stock prices in a DCF analysis is consistent with the normalization principle of ratemaking.

Q. Please discuss Mr. McNally's comments on the growth component you utilized in your DCF analysis.

A. Again, as stated previously, absent evidence to the contrary, it is my opinion that, consistent with the EMH upon which the DCF is predicated, investors avail themselves of both historical, as well as projected, growth rate data, particularly for water utilities.

As for missing data (page 30, line 581 – page 31, line 600), namely, Value Line forecasted growth in dividends per share (DPS) and EPS, in effect, I have assumed that the missing growth rates are equal to the averages for each group. Such an assumption is reasonable given that the companies in each group were selected upon the basis of similar risk – to CIWC and to each other. Moreover, there is no evidence that the missing growth rates, if available, would result in a lower upper end of the range growth rate conclusion. In fact, for the majority of companies in both proxy groups for whom Value Line projected growth in EPS are available, the Value Line growth rates are higher than the I/B/E/S growth rates. And given, Mr. McNally's comment that smaller companies "tend to have greater growth potential" (page 33, ICC Staff Exhibit 7.0R, line 649), it is entirely possible that the "upper end estimates of the growth rate ranges" may, in fact, be understated. However, in the absence of missing Value Line projected growth rate data, no real conclusions can be drawn regarding what the growth rates would be if data were available for all companies. Therefore, given that the companies were selected based upon similar risk, it is reasonable to assume that investors would assume the missing growth rates to be equal to the average growth rates of the companies for whom data are available.

Q. On page 31, line 601 through page 32, line 612, Mr. McNally claims that you "incorrectly substitute[s] the average return on all equity investment for "R" , which is defined as the return on future investment only." Please comment.

A. This is incorrect, insofar, as the retention growth method (BR + SV) is applied in utility ratemaking. Both Roger A. Morin in Regulatory Finance - Utilities Cost of Capital and David C. Parcell, an expert rate of return witness, in The Cost of Capital – A Practitioner's Guide (the study manual prepared for the Certified Rate of Return Analysts program of the Society of Utility and regulatory Financial Analysts (SURFA)), indicate that the "R" component of the BR + SV growth method is defined as the return on book common equity – all common equity not just future investment, which may be financed with either debt, common stock or a combination of both.

To reiterate, what rate of return analysts attempt to do is to emulate investor behavior. Absent evidence to the contrary and given the availability of historical data, it is reasonable that investors avail themselves of all such data, consistent with the EMH upon which market-based cost of common equity models, such as the DCF, RPM, CAPM and CEM are based. In the final analysis, one must look at the end result and judge it upon the basis of common sense and whether or not it is a reasonable approximation of investor behavior, which is influenced by, among other things, the financial literature.

C. Capital Asset Pricing Model

Q. Mr. McNally, at page 32, line 617 - 618 of ICC Staff Exhibit 7.0R, criticizes your use of Ibbotson historical data in your derivation of the total market return component of your CAPM analysis. Please comment.

A. Mr. McNally is indeed correct when he states, at page 32, lines 616 to 618 of ICC Staff Exhibit 7.0R, that one estimate of total market return which I utilize is the arithmetic mean of the long-term historical equity total earned return rates on common stocks of 13.3%. As discussed previously, this is entirely appropriate for cost of capital purposes as

the arithmetic mean return is the best estimate of the next expected value for the total return on common stocks. Furthermore, as discussed in CIWC Exhibit No. 7, at page 35, line 35 through page 36, line 17, use of the arithmetic mean provides insight into the variance and standard deviations of returns. This is particularly important as ex-post (historical) total returns and equity risk premia differ in size and direction over time. Absent the valuable insight of the prospect for variance, and hence, risk, provided by the arithmetic mean, investors cannot meaningfully evaluate prospective risk. Thus, the use of long-term historical data to develop an expectation of the future long-term average total market return and resultant equity risk premium is entirely appropriate for use in the CAPM.

Q. **Mr. McNally is also critical of your use of Value Line projected median total market appreciation and median projected dividend yields in your derivation of the total market return component of your CAPM analysis, at page 32, line 618 through page 33, line 662 of ICC Staff Exhibit 7.0R. Please comment.**

A. When evaluating Value Line information, one must remember that Value Line, with over 100,000 subscribers and its wide availability in most public libraries, is, hence, investor influencing. To reiterate, rate of return analysts, such as Mr. McNally and myself, should be attempting to emulate investor behavior. Consistent with the EMH, investors can readily and inexpensively avail themselves of Value Line information. This is especially true for water utilities whose common stocks on average are 78.5% owned by individuals (see Schedule 13, CIWC Exhibit No. 7). Therefore, it must be concluded that the information provided by Value Line is investor influencing and should not be rejected by any rate of return analyst.

That having been said, Mr. McNally's criticism of my use of Value Line's median 3-5 year price appreciation of all 1700 stocks covered in Value Line's Standard Edition is moot. It is true that the median does not weigh the "relative value of the

securities composing the market portfolio." Because it does not, it provides a better estimate of the central tendency of the securities in that portfolio. In other words, use of the median compensates for the effect that extremely high or low expected price appreciation and number of shares outstanding have on either the simple or weighted arithmetic mean. The median is that value of a data series or distribution such that half of the observations are larger, and half are smaller, so that there is an equal number of observations on either side of the median. As such, the median is not influenced by extremely high or low observations.

In addition, Mr. McNally makes the unsupported comment that "the median growth estimate does not afford higher weights to large companies, and thus over weights the contributions of smaller companies, which tend to have greater growth potential." Such a comment is not supported by a showing that indeed, the smaller companies in the universe of Value Line's 1700 stocks do have higher price appreciation potential than the smaller companies. Without knowing the price appreciation potential of each and every stock, large and small, in Value Line's 1700 stock universe, no meaningful conclusion can be drawn as to whether the median price appreciation is higher or lower than a simple or weighted arithmetic mean. Mr. McNally has provided no information to support his conclusion.

The same response is appropriate regarding Mr. McNally's comments on the median expected dividend yield of all dividend paying stocks provided by Value Line. Without knowing precisely each and every dividend yield for all 1700 hundred stocks covered by Value Line in its Standard Edition, the conclusion that the median overstates the average, or mean, dividend yield can not be drawn. Again, the median is that value of a data series where half the observations are higher and half are lower. It is entirely, conceivable that there are a sufficient number of stocks yielding the median dividend

yield that by adding those non-dividend paying stocks to the data series, the median would still be the same.

Again, what we, as rate of return analysts must are attempting to do is to emulate investor behavior. Investors have the Value Line median price appreciation potential, widely and inexpensively available to them. The EMH compels us to believe that investors utilize such information in forming their expectations.

D. Empirical Capital Asset Pricing Model

Q. On page 34, line 664 through page 37, line 711 of ICC Staff Exhibit 7.0R, Mr. McNally describes "errors" in your ECAPM. Please comment.

A. Mr. McNally is indeed correct when he states that "[q]uantitative research suggests the relationship between risk and return is flatter than the CAPM predicts." However, he is incorrect when he states that Litzenberger et al. adopt "raw beta as the measure of risk in its tests of the relationship between risk and realized returns" (page 35, lines 675 – 676 and 679 – 682) and "suggest that globally adjusted betas, such as those which Value Line publishes, are a solution to the discrepancy between the theoretically predicted and empirically observed relationship between risk and return." Litzenberger, et al. used both adjusted and unadjusted betas in their study, as is clear from Schedule 3 of Exhibit No. 7 accompanying this testimony, a copy of the article by Litzenberger, et al. Moreover, their conclusion was that for utilities with a beta less than one and with lower than average residual risk, i.e., non-diversifiable risk, cost of capital estimates using Bayesian or statistically adjusted betas and a linear relationship, i.e., traditional CAPM between risk premia and betas "would be lower than that obtained using a linear relationship estimated with unadjusted or globally adjusted betas." [6] (Note that Value Line betas are globally adjusted betas.) In addition, they conclude by stating that these results "indicate the

[6] Id., p. 382.

importance of further research on the revision of betas towards unity.[7] They do not state that globally adjusted betas, such as Value Line's, "are a solution to the discrepancy between the theoretically predicted and empirically observed relationship between risk and return."

Q. Please comment upon Mr. McNally's assertion that by using adjusted betas in your ECAPM, you have "already effectively transformed" your CAPM into an empirical CAPM. (page 35, lines 682 –684 of ICC Staff Exhibit 7.0R).

A. As previously discussed, my colleague, Mr. Hanley has been in communication with Dr. Morin. As their e-mail correspondence (Schedule 4 of Exhibit No. 7) indicates the ECAPM compensates for CAPM's inherent bias by ascribing a higher intercept and flatter slope to CAPM. It is not an attempt to increase beta. Dr. Morin states:

> "There are two distinct separate issues involved when implementing the CAPM. First, given the validity of the standard CAPM, what is the best proxy for expected beta? Second, and more fundamentally, does the standard form of the CAPM provide the best explanation of the risk-return relationship observed on capital markets?"

Regarding the standard CAPM, Dr. Morin states:

> "There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is one of the most well-know results in finance. A CAPM-based estimate of cost of capital underestimates the return required from low-beta securities and overstates the return from high-beta securities, based on the empirical evidence. The empirical form of the CAPM refines the standard form of the CAPM to account for this phenomenon.
>
> Thus, I do not share the view that the ECAPM is equivalent to a beta adjustment. For utility stocks with betas less than one, the CAPM understates the return. The ECAPM allows for the CAPM's inherent bias by ascribing a higher intercept and flatter slope to the CAPM. The ECAPM is a return (Y-axis, vertical axis) adjustment. It is not a beta risk (X-axis, horizontal) adjustment. The ECAPM is

[7] Id., p. 382.

not an attempt to increase the beta estimate, which would be a horizontal x-axis adjustment. The ECAPM is a return adjustment rather than a risk adjustment." (emphasis added.)

As indicated previously, Dr. Morin is a well-known finance professor and textbook author, specializing in regulatory finance. He also indicates in his correspondence with Mr. Hanley that there "is a huge financial literature which supports both the use of the ECAPM and the use of adjusted betas."

Moreover, regulatory support for the ECAPM can be found in the New York Public Service Commission's Generic Financing Docket, Case 91-M-0509.

In view of the foregoing, Mr. McNally's assertion that by using adjusted betas in my ECAPM, I have "already effectively transformed" my CAPM into an empirical CAPM. (page 35, lines 682 –684 of ICC Staff Exhibit 7.0R) is incorrect, without merit and unsupported by the underlying research. Hence, my use of Value Line adjusted betas in the ECAPM does not result in an overstated estimate of the cost of common equity. Rather, the use of the traditional CAPM results in an understated estimate of the cost of common equity capital for a utility with an adjusted beta below 1.00. Therefore, my CAPM analysis, which includes both the traditional CAPM and the ECAPM, is a conservative approach resulting in a reasonable estimate of the cost of common equity.

E. Risk Premium Model

Q. Mr. McNally asserts your use of historical data is inappropriate for use in your RPM analysis (page 38, line 731, ICC Staff Exhibit 7.0R). Please comment.

A. Again, as discussed previously, the use of historical data is entirely appropriate for cost of capital purposes as the arithmetic mean return over a long period of time is the best estimate of the next expected value for the total return on common stocks. Furthermore, as discussed in CIWC Exhibit No. 7, at page 35, line 35 through page 36, line 17, use of the arithmetic mean provides insight into the variance and standard deviations of returns.